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ABSTRACT

To study the users and use of the subject searching capability offered by the new online public catalog at the New York State Library (NYSL) a study was begun before the catalog change in mid-1983 and continued for a considerable time after the change. Data were collected during three 1-week periods; one preceded the catalog change and two followed. It was thus possible to detect differences associated with the catalog change, and also to determine whether any of the differences detected were likely to be permanent or transient. The methodology of the study was adapted from earlier use studies of NYSL. As in the earlier studies, library user traffic was measured unobtrusively throughout the study weeks, and frequent short, standardized interviews were conducted with a sample of users. In this research, the method was applied simultaneously to the population of users of the public catalog, by unobtrusively counting and timing users of the online computer terminals and microfiche viewers associated with the public catalog, and by interviewing a sample of catalog users as they were leaving the catalog-access devices. Factors considered for possible impact effects included: the amount and distribution of use of the public catalog; the proportion of subject searches; the duration of catalog searches; their success rate; the use of librarian assistance with catalog searches; user preference for online catalog access versus microfiche catalog access; the motivation of catalog searches; and the affiliations of catalog users. References, the User Exit Interview Guide, and the Catalog User Interview Guide are appended. (THC)

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A STUDY OF IMPACT OF TECHNOLOGICAL CHANGE IN LIBRARY SERVICE FACILITIES:

Changes in Use of the Public Catalog at the New York State Library Associated with the Introduction of Online Subject Searching Capability in the Public Catalog

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Abstract

In mid-1983, the New York State Library (NYSL) introduced a new feature in its online public catalog—the capability to conduct subject searching of the catalog through online computer terminals. This provided NYSL users with an alternative to the existing microfiche catalog approach for subject searching. In order to look for impacts of the new online subject searching capability on the users and uses of NYSL's public catalog, a research study of NYSL catalog use was undertaken. The study was begun before the catalog change was introduced and was continued for a considerable time after the change. Data were collected during three different one-week periods; one of them preceded the catalog change and the other two followed the change. This made it possible to detect differences that might be associated with the catalog change, and also made it possible to determine whether any differences detected appeared to be permanent or transient.

The study method employed in this research was adapted from a series of earlier studies of the use of NYSL by visitors. As in the earlier studies, library user traffic was measured unobtrusively throughout the entire study week, and frequent short, standardized interviews were conducted with a sampling of exiting users throughout the week. In this research, however, the method was applied simultaneously also to the population of users of the public catalog within the library, by unobtrusively counting an[illegible]ming uses of the various online computer terminals and microfiche viewers associated with the public catalog, and by interviewing a sampling of catalog users as they were leaving the catalog-access devices. The collection of data on general library use along with data on catalog use provided a basis for eliminating random week-to-week variations in the general use pattern when searching for differences properly associated with the change in the public catalog.

Factors considered for possible impact effects of this study included: the amount and distribution of instances of use of the public catalog; the proportion of use instances that are subject searches; the duration of catalog searches; their success rate; the degree of use of librarian assistance with visitors' catalog searches; user preference for online

catalog access versus microfiche catalog access; the motivations of catalog searches; and the affiliations of catalog users.

Major findings presented and discussed in this report include:

- Use of the new online subject catalog in the two follow-up studies was substantial and enduring.
- Introduction of online subject access to the public catalog appears to have had the impact of stimulating catalog use by a larger proportion of visitors.
- The proportion of public catalog use instances that were subject searches increased substantially for visitors, and decreased substantially for staff.
- Introduction of online subject access substantially reduced the level of use of the microfiche catalog, but the microfiche catalog still receives about one third of all public catalog use.
- Average time for public catalog searches did not change after the introduction of online subject access.
- Over-all user-perceived success rate for public catalog searches dropped somewhat after the subject catalog change.
- The extent to which visitors made use of librarian assistance in catalog searching rose after the introduction of online subject access, but the change did not persist.

Analysis of the collected data has been partially completed and is continuing. Preliminary findings of impacts are presented. Opportunities for instructive follow-up research are outlined.

Introduction

The computerization of catalog services in research libraries is generally regarded as both inevitable and desirable. Many major research and academic libraries have already installed computerized public catalog systems to replace more traditional catalog systems such as card catalogs, book catalogs, and microform catalogs; in most libraries where such changes have not yet been made, active planning for them is in progress.

The administrative imperatives for computerizing a library's public catalog are usually quite clear—the prospect of providing catalog service with fewer staff members, lower unit costs for cataloging, faster input of new catalog data, faster reorganization or modification when required, the ability in principle to interact with broader computer networks and consortia, and the ability to extend catalog access opportunities beyond the physical confines of the library building. A host of online public catalog systems are emerging that, to different degrees and in somewhat different ways, address these very important goals of computerization (1).

Another important administrative consideration, of course, beyond trying to hold down the costs of catalogs and increase their accessibility, is that of maintaining the quality of the catalog service that is provided to library patrons. It is usually assumed as obvious that a new, computerized catalog system will serve the library's users at least as well as the traditional catalog it supplants, and probably better. But not very much research has been done as yet to determine the accuracy of such assumptions, nor the circumstances under which they may be true or false. What research has been done on the service quality of computerized public catalogs has usually involved questionnaire surveys or interview surveys of catalog users undertaken only after installation of the new systems (2, 3). Such studies have determined rather convincingly that users of the new catalog systems tend to accept them easily or enthusiastically and tend to use them somewhat differently from the more traditional catalogs (conducting a higher proportion of subject searches versus title or author searches). However, there is still a dearth of

information on such questions as: whether and how computerization of the catalog system affects the success rates of catalog searches, duration of catalog searches, user tendencies to utilize or avoid the catalog; and how changes in specific features of the catalog system are reflected in the use and users of the system. Probably the best approach to such questions is to conduct research which investigates the use of a catalog system before it is changed, as well as after it has been changed, in order to identify as directly as possible whatever impacts the change may produce.

The opportunity to undertake a potentially significant impact study of computerization of a public catalog presented itself in 1982 at the New York State Library (NYSL). NYSL is a major research library and is the largest of the state libraries in the United States (4). Its rich collection and its many information services serve not only state governmental agencies, but also various state and national library networks and individual visitors of all kinds (5). NYSL's public catalog is a hybrid system, partially on computer and partially on microfiche. A computerized online author/title search system using truncated search keys has been available since 1978, when NYSL moved to the Cultural Education Center in Albany's Empire State Plaza. Its 3.2 million card catalog was not moved to the new buildings and therefore not available for public or staff use. In its place, a microfiche catalog was provided for public use which can be accessed by subject headings as well as by author and title terms; the microfiche catalog consists of separate microfiche series and supplements for general monographs, government documents, and serials. Numerous online terminals and microfiche viewers are in place for visitors' use throughout the public areas of NYSL.

A lengthy in-house effort to design and develop a computerized subject access system reached its objectives in 1982, and NYSL scheduled installation of the new system for public use in mid-1983. The microfiche catalog would be maintained in parallel with the new online system, at least for some length of time. Thus, there was an opportunity for a "before-and-after" impact study, and also an opportunity to compare uses of two different subject catalog systems that would be available simultaneously to NYSL users.

The authors had worked together previously in connection with a series of research investigations of the visitor population at NYSL (6, 7, 8). It was seen that the same kind of research techniques that had been used to study NYSL's general visitor population could be adapted readily for application in a more focused study of NYSL's catalog users. A research plan was designed.

A request for partial support through a grant to assist faculty/librarian cooperative research was submitted to the program on Professional Education and Training for Research Librarianship (PETREL) of the Council on Library Resources. The requested support was granted; it provided funds for employment of library school students to assist with the collection of research data.

Work on the research project began in January 1983. Data collection ended in May 1984. Support under the grant from the Council on Library Resources will end in October 1984. The work of analyzing data and evaluating the findings will continue beyond that date.

OBJECTIVES

The aim of this research was to detect and to measure such impact on catalog use and users at NYSL as might result from the addition to the NYSL public catalog of a new online subject searching capability. A number of particular aspects of catalog use were selected a priori to be observed for possible indications of impact; these included:

- the amount and distribution of catalog use instances;
- the proportion of catalog uses that are subject searches;
- the duration of catalog searches;
- the success rate of catalog searches;
- the use of librarian assistance with catalog searches by visitors;
- user preferences for online versus microfiche subject catalogs;
- motivation of catalog searches;
- user status or affiliation.

The research involved collecting relevant information at NYSL during several week-long sample periods both preceding and following the change in the public catalog, then comparing the data for indications of impact and also for indications of the magnitude and the permanence of any impacts detected.

Methodology

Research Design

The plan of this research is very simple in concept: First, establish a "baseline" profile of catalog use factors by studying catalog use before the system has been changed. Next, repeat the same measurements shortly after the new catalog system has been introduced, and repeat them once more several months later. Finally, compare data in the three sets of measurements to determine whether there have been apparent impacts from the catalog change, and also to determine for each impact whether it has persisted or diminished with the passage of time. A discussion of the features of this research plan was presented shortly after the project got under way. (9).

The period of time selected for the baseline study and the two follow-up studies was one week for each. Care was exercised to try to select normal weeks, without holidays and without unusual scheduled events that would be expected to perturb the level or nature of NYSL use by visitors. NYSL is open from 9 a.m. to 5 p.m. on weekdays only; a week of study thus requires observation only during normal business hours.

The data collection activity was basically the same in each study week. It was a coordinated blend of two research techniques: 1) the counting of total visitor traffic by unobtrusive observation, and 2) the interviewing of a sample of visitors at frequent pre-set intervals throughout the test period. This coordinated method was used very successfully in previous studies of the NYSL user population (6, 7, 8). In the previous studies, visitors were counted by an observer as they exited from NYSL (there is only one portal for visitors), and the interviews were conducted by a second researcher with the visitors who happened to exit immediately after each 15-minute interval on the clock. Since staff members use the same portal as visitors but were not to be counted by the traffic observer, the interviewing served as an important check on the accuracy of the traffic observer's discrimination, and provided a basis for adjusting the recorded traffic tally to make it more accurate. Interviewing also provided quantitative data about characteristics of the visitor population and its use of NYSL. The traffic counts provided a

basis for normalizing the quantitative interview data with weighting factors to compensate for mismatches in the relative numbers of visitors and numbers of interviews throughout the day.

In the present study, the same coordinated blend of traffic counting and interviewing was employed; but it was applied this time to two different populations at NYSL:

One population that was studied was again the NYSL visitor population—exactly the same population that had been studied in the earlier research. This was considered necessary because there can be a good deal of fluctuation from day to day or week to week in level and composition of visitor attendance, and it is important to be able to screen out the effects of such "irrelevant" fluctuations when seeking impacts that are attributable to the change in catalog system.

The second population studied was that of users of the public catalog at NYSL. This is not the same as the visitor population, since not all visitors are catalog users. Nor is it exactly a subset of the visitor population, since a substantial portion of the public catalog use at NYSL is by members of the NYSL staff. Staff members also have microfiche viewers and online catalog terminals for their exclusive use at work stations in non-public areas; this use was not studied.

The observation and recording of traffic is a rather simple matter in the case of the visitor population, but more difficult for the public catalog user population. For the counting of visitor traffic, an observer was stationed just outside the single exit portal from NYSL's public area (the seventh floor public elevator vestibule); from that point, all exiting visitors could be observed. Traffic was registered on two hand-held counters, one for females, one for males; counter readings were entered on a tally sheet at 15-minute intervals. The traffic observer also recorded for every 15-minute interval the number of visitor interviews that had been attempted by co-researchers, the number of refusals if any, and the number of staff members mistakenly aproached for interviews if any.

In the case of public catalog user traffic, the observer's task was to keep a minute-by-minute record of any occupancy of each of the public catalog access devices, that is, each of the microfiche catalog viewers and online catalog terminals provided for use by visitors. At NYSL, these devices are grouped into only two locations, where they are in close proximity—most of them are in the wing to the left of the entrance (north), a few are in the wing to the right (south). To reduce personnel needs in this research, a decision was made to observe traffic at only the larger of these two groupings. In this grouping, one traffic observer kept track of 8 microfiche viewers and 4 online terminals during the baseline study; this configuration was changed to 6 microfiche viewers and 10 online terminals during the follow-up studies. On a simple form with columns for the individual machines and lines for each minute of the hour, the observer drew a vertical line trace for each instance of use of each machine and added code symbols to show whether the user was a female visitor, a male visitor, or a staff member, to show whether there was staff-visitor interaction during the use instance, and to flag use instances that resulted in interviews.

The pre-set quota of exit interviews to be attempted was one interview during each 15-minute interval from 9 a.m. until 11:45 a.m., then two per interval until 4:30 p.m., then three in the final two intervals. This schedule was chosen to correspond more or less to the hourly variations in NYSL visitor exit traffic that had been clearly established in earlier research. On the other hand, the quota of catalog user interviews to be attempted was set at a constant one interview per 15-minute interval because there was no previously established catalog traffic pattern to use as a model. This simplistic quota was maintained in the follow-up study weeks for consistency.

The interviews for both populations usually required only one or two minutes to complete. Interview questions were standardized, but were different for the two populations. A printed form containing the questions and designed to fit into a clipboard was used for recording the results of each interview. The visitor exit interview form is attached as Appendix 1. The catalog user interview form is attached as Appendix 2. Both were

designed with the help of comments and suggestions from NYSL staff. The exit interview questions were selected to elicit information about the frequency of the visitor's use of NYSL, about the length, motivation, and success of the visit just ended; about the use or nonuse of the public catalog, about the particular wing in which any public catalog use occurred, about the use or nonuse of staff assistance, and about the visitor's affiliation or status. The catalog use interview questions were chosen to gain information about previous use of the library and the catalog system, about the motivation of the catalog search just completed and the approach used, about the perceived success of the search, and about the user's affiliation.

Implementation

The new online subject catalog was made available for public use at NYSL during the late summer of 1983. Two microfiche viewers were removed and six new online terminals were installed in the observed public area. The same type of terminal is used for subject searching as for author/title searching. In fact, all of the online terminals are capable of being switched by knowledgeable NYSL staff members to function as either a subject terminal or an author/title terminal; however, NYSL chose not to instruct visitors on this switching capability, and instead designated and labeled each online terminal as either a subject or an author/title terminal. The usual configuration was 5 subject terminals and 5 author/title terminals. The research team kept careful track of the designation of each terminal under observation; there was some variation in designation of individual machines from one day to another and sometimes within a day.

The NYSL online catalog system was designed for two levels of search sophistication (10), but only the menu-driven Level 1 was made available through the public catalog online subject terminals during the period of this research. At this level, a subject search is performed in a series of steps that are prompted by messages on the screen. The subject search may be the specification of one or more words that are presumed to be in a subject heading (multiple words are automatically AND-combined), or the specification of the registry number of a desired subject heading. The response to the first is a list of matching subject headings that shows the number of items cataloged under each; a

list of titles under each heading may then be called up. The response to the second type of subject search is the list of titles cataloged under that subject heading. In either case, when there is only a single reference in the list, the full record is displayed. Otherwise full bibliographic records may be called up one at a time. Bound printouts of the full list of NYSL subject headings, in alphabetical order, are kept on a table in the center of the public catalog area for use in identifying valid headings and their associated registry numbers.

Printed, multi-page flip displays containing instructions on the use of NYSL's catalog system are provided on the table close to each public catalog access device. Visitors may ask for librarian assistance at an information desk in the public catalog area, or at any of the three or four librarian work stations for specialized parts of the collection that surround the public catalog area and that are manned through much or all of each day.

The baseline (pre-change) study week was begun on Monday, April 18, 1983, and was concluded on Wednesday, April 27. Because of a sudden snow storm that caused early closing on the 19th and bad traffic conditions into the next day, no useful data were obtained for the original Tuesday and Wednesday; instead, data were collected on the following Tuesday and Wednesday and incorporated with the original Monday, Thursday, and Friday data to make up a composite normal week. The first follow-up study week was uninterrupted, November 28 through December 2, 1983. The second follow-up week, also uninterrupted, was April 30 through May 4, 1984; this was approximately the anniversary of the baseline study week, and it was chosen deliberately for that reason.

The research team that accomplished data collection in this research consisted almost entirely of master's program students from the State University of New York at Albany's School of Library and Information Science, working under the supervision of one of the investigators. A total of 36 people were involved in the data collection activities at one time or another during this research. The membership of the data collection team changed greatly from one study week to the next. Even within a particular study week, the team composition varied from day to day or from morning to afternoon

because members had other obligations. The contribution of a participant could be as little as a half day or as much as four or five full days. Recruitment of data collectors was aimed at assuring availability of five data collectors at all times during the study week: one traffic observer and one interviewer at the NYSL visitor exit, one traffic mapper and one interviewer at the public catalog, and one spare person to provide rotation and relief for the others or to learn how to do the data collection work. The data collectors who handled the first day of a study week were instructed in advance at brief training sessions held at the library school; others were instructed on the job at NYSL when they reported for work. Written instructions were provided as well. No problems were experienced. A substantial proportion of the students who participated in the project were already aware of the objectives and the research methodology from assigned readings and class discussions in some of their courses.

Aside from the snow storm mentioned above, there were no major problems in achieving comparability of the three different study weeks. During the first follow-up, there was one afternoon when not enough data collectors were available to maintain the counting and interviewing of exiting visitors; this was handled in later data analysis by assuming that the afternoon traffic count had remained in the same proportion to the weekly average as had the morning traffic count for that day, and by treating the interview results from the other four afternoons as though they represented the entire week. In all of the study weeks there were some episodes when the online terminals went down or became extremely slow. These incidents were duly noted; but they were so few, so randomly distributed, and generally so brief that it was not considered necessary to give them special treatment in the data analysis. A fire drill that disrupted and emptied the library for several minutes during the second follow-up week was similarly ignored in data analysis, at least for the present.

Analysis

The initial analysis of traffic data and interview data for the NYSL visitor population was carried out in the same way as described in reports of previous user studies at

NYSL; it thus included the adjustment of traffic counts to correct for miscounting of staff members as visitors, and included weighting of interview results in order to match the traffic density at the time of interviewing. The adjusted average counts of visits per day during the three study weeks were 345, 317, and 316, respectively. The numbers of visitor interviews completed in the three study weeks were 264, 218, and 273.

For catalog use traffic data and interview data, the analysis that has been carried out so far has been focused only on answering certain specific questions regarding plausible impacts that may have resulted from the catalog system change. These questions and the findings are given in the next section of this report. They do not begin to exhaust the possibilities for exploitation of the data that were collected; other plausible impact questions can be asked and answered. In the data analysis to date there was no weighting of interview data to match the normal pattern of catalog use traffic throughout the day. This is because it is not clear yet that there is any pronounced normal pattern of public catalog traffic throughout the day, other than sparse use at the extremes of the day (when interviews are also sparse); an apparent huge surge of catalog use immediately after the lunch hours was observed during the baseline week and the first follow-up week but was not observed during the second follow-up week. Average daily catalog use instances observed during the three study weeks were 222, 202, and 162. The numbers of interviews with catalog users completed in the three weeks were 158, 147, and 150.

The mapping technique that was employed for recording use of the public catalog access machines was designed to permit analysis of queuing problems in the public catalog area. However, no queuing problems developed. There were enough machines available to accommodate all would-be users during all of the study weeks, and no waiting lines or disappointed users were observed. Data were developed to throw light on the unused access device capacity, and when and where it occurred.

Results to Date

Impact Questions Investigated

The possibilities for conceivable impacts of a system change on the uses and users of the system are literally infinite; it is simply impossible to investigate every single possibility that can be conjectured. The numerous types of data collected in this study will, in theory, allow for the investigations of hundreds or thousands of impact possibilities—all the combinations of data types that may be assembled and compared.

In order to reduce the data analysis task to reasonable proportions, priorities had to be established. These took the form of questions that seemed most worth answering regarding possible impacts of the catalog change. Seven high-priority questions, listed below, were formulated and then answered on the basis of the data collected. Further questions may be addressed in the future as time and resources permit.

The impact questions that are dealt with in this report are:

1. After the new online subject searching capability was introduced in the NYSL public catalog, did it attract much use?
2. After the introduction of the online subject searching capability, was there a change in the over-all level of use of the public catalog by visitors to NYSL?
3. Was the introduction of online subject searching capability followed by a change in the proportion of public catalog use instances that are subject searches?
4. Has the new availability of online catalog access for subject searches as well as author/title searches resulted in rejection of the older microfiche catalog?
5. Following the introduction of the online subject catalog, was there a marked change in the average amount of time spent per instance of use of the public catalog?
6. Was there a change in the success rate of public catalog searches after introduction of the online subject catalog?

7. After introduction of the online subject catalog, was there a change in the extent to which visitors made use of librarian assistance in conducting their catalog searches?

Findings

Each of the seven questions regarding impact is discussed separately on the following pages.

Question 1.

After the new online subject searching capability was introduced in the NYSL public catalog, did it attract much use?

Yes. In the first follow-up study after introduction of the new online subject search capability, use of the online subject catalog constituted 22.9% of instances of public catalog use. In the second follow-up study, use of the online subject catalog had risen to 28.6%. Thus, in the sense of attracting use, the impact of the catalog change has been immediate, substantial, and apparently enduring.

Question 2.

After the introduction of online subject searching capability, was there a change in the over-all level of use of the public catalog by visitors to NYSL?

Yes, there was a decrease in the average daily total of instances of public catalog use following the catalog change and an even greater decrease from the first follow-up study to the second follow-up study. However, this decline is probably irrelevant as an impact indication, because it can be accounted for by factors other than catalog impact. From the time of the baseline study to the first follow-up study, there was a decline in average daily visits to NYSL that quantitatively explains the decline in observed public catalog use. The further decline in public catalog use in the second follow-up study can be shown to be due entirely to a sharp drop in instances of public catalog use by members of the NYSL staff, and not due to decreased catalog use by visitors to NYSL. The change in staff use of the public catalog has not been fully explained as yet. It may reflect a staffing level change at NYSL in which one of the four librarian reference stations in the library wing that was studied was closed and several staff members were shifted to the library wing that was not studied. Or it may reflect a change in searching behavior by staff members, with increased tendency to do their catalog look-ups on terminals at librarian work stations rather than on public catalog terminals. Or it may reflect genuinely reduced staff use of the catalog.

Instead of gross counts of catalog searching, a better indicator of possible change in the volume of catalog searching activity would be the ratio of the average daily number of public catalog uses by library visitors (not staff members) to the average daily number of visits made to the wing of the library where catalog use was measured. This more complex concept compensates for extraneous changes in visitor attendance and also for changes in staffing level and staff assignments. Using a combination of direct and indirect measurements, it is calculated that this ratio was 0.412 visitor uses of the public catalog per visit to the test wing of the library at the time of the baseline study; it increased to 0.504 in the first follow-up study, and subsequently dropped to 0.478

in the second follow-up study. Thus, there is a strong suggestion that the impact of the introduction of online subject searching capability was to produce a substantial and lasting increase in the volume of public catalog use by visitors.

This apparent impact can be analyzed further: Increased visitor use of the public catalog could be a result of either (or a combination of): a) more catalog uses per visit by the same number of visitors that were catalog users previously, or b) use of the catalog by a relatively larger proportion of library visitors. The proportion of visits to NYSL in which there was use of the public catalog was, chronologically, 28%, 33%, and 38%. In those visits that involved any catalog use, the average number of catalog uses per visit showed no appreciable change from the baseline study to the first follow-up (1.46 and 1.52 catalog uses per visit in which there was any catalog use); it then dropped (to 1.26) in the second follow-up.

In summary, the introduction of online subject access to the public catalog appears to have had the impact of increasing the volume of catalog use by visitors; the mechanism of the impact has been the stimulation of catalog use by a larger proportion of library visitors and not the stimulation of more catalog use by the same proportion of visitors.

Question 3.

Was the introduction of online subject searching capability followed by a change in the proportion of public catalog use instances that are subject searches?

Yes. In the baseline study, it was determined that 27% of all public catalog use instances were subject searches. In the first follow-up study after the catalog change, the proportion of subject searches was 41%; in the second follow-up study it was 49%. These figures seem to imply that the catalog change caused catalog users to do proportionally more subject searches, and seem to imply also that the trend toward more subject searching persisted and grew from the first follow-up to the second follow-up. In fact, as explained below, the first of these implications is only partially correct, and the second is false.

Examination of the research data in greater detail reveals that the increase in proportion of subject searching occurred only among public catalog users who were visitors, and not among public catalog users who were staff members. For visitors, the subject search proportion went from 67% in the baseline study up to 88% in the first follow-up; and it then subsided somewhat to 82% in the second follow-up. For staff members using the public catalog, the subject search proportion actually plunged from 33% in the baseline study to 12% in the first follow-up; it then revived somewhat to 18% in the second follow-up, which is still far below the starting level. Clearly, there were impacts on both of these user groups; and the impacts were exactly opposite.

The over-all figures cited in the first paragraph above show a marked and growing increase in the proportion of subject searches (rather than a decrease) because the instances of public catalog use by visitors outnumber instances of public catalog use by staff members. In fact, as already mentioned earlier, the staff share of public catalog use instances shrank dramatically from one study week to the next—from 47% to 38% to 23%. The reason for this shrinkage is not known. However, it is this changing proportional representation of visitors and staff members in the over-all public catalog use that accounts for the rise of subject search proportion from the first follow-up to the second follow-up. The suggestion of a growing impact effect is incorrect. For each of the two user groups

there was a lessening of the initial impact, not an increase. Had the proportion of visitor use instances to staff use instances remained constant, the over-all figures would have shown this lessening of impact from the first follow-up to the second.

Question 4.

Has the new availability of online catalog access for subject searches as well as author/title searches resulted in rejection of the older microfiche?

Partially. Before introduction of the online subject catalog, the microfiche catalog received 58.6% of the public catalog use instances, and the online author/title catalog received 41.4%. In the first follow-up period, the microfiche catalog share dropped to 35.5%; and in the second follow-up it was 34.2%. There was very little change in the use share of the online author/title catalog; thus, the growth of online subject catalog use was achieved entirely at the expense of microfiche catalog use. The microfiche catalog no longer receives the dominant share of public catalog use. However, it still attracts one third of the total use, which is a higher level than the new online subject catalog has attracted so far.

The division of use of the microfiche catalog between subject searches and author/title searches was not changed by the introduction of the new online subject catalog alternative. Subject searches accounted for 44% of microfiche catalog uses in the base study, and for 46% and 48% in the two follow-up studies. Thus, the impact of the catalog change in reducing use of the microfiche catalog was about equal for both types of microfiche catalog searches. A possible explanation for this finding that warrants further exploration is that there had originally been a substantial number of intended subject searches that users of the microfiche catalog were "sublimating" by searching on known authors or titles instead, and that such searches now tend to be conducted as proper subject searches on the online catalog. The tendency of catalog users to sublimate subject searches in a catalog that is inhospitable was established in previous research on use of a large card catalog (11).

It is important to note also that the scope, information content, and access terms of the microfiche and the online catalogs are not 100% identical. There can be legitimate reasons for favoring one approach over the other for particular types of literature interests. The NYSL staff members who conduct catalog s[illegible]es often remark on the differences

in the catalogs for special purposes. Some of the visitors interviewed after catalog searches have also remarked on differences in the catalogs; but many of these visitors seem to be misinformed about the relative strong and weak points of the two catalogs.

Question 5.

Following the introduction of the online subject catalog, was there a marked change in the average amount of time spent per instance of use of the public catalog?

No. The average amount of time spent per instance of public catalog use (all types of searches, both fiche and online access) remained constant (7.57 minutes, 7.59 minutes, 7.59 minutes). The median time for public catalog use increased a little (4.46 minutes, 4.74 minutes, 4.68 minutes). There was a decrease in the relative proportion of extremely long searches; but there was also a decrease in the relative proportion of extremely short catalog searches. Most of the long searches were subject searches.

These findings warrant further analysis and study. Particularly interesting is the apparent constancy of the average time devoted to catalog searching by a library's user population; it should be clarified whether this is a finding that holds up over extended periods and for different populations, or whether it is merely a coincidence of this particular research project. One would expect the catalog system (access means, response time, etc.) to have a strong influence on the average search time; it would be a major discovery if average search time should turn out to be a characteristic only of the user population and not of the catalog system.

Question 6.

Was there a change in the success rate of public catalog searches after introduction of the online subject catalog?

Yes. The over-all success rate for public catalog searches (determined from responses of users who were interviewed after their catalog searches) dropped after the catalog change. It fell from 74% to 72% and then to 69%. However, the proportion of searches that were rated clearly unsuccessful did not increase; rather, there was a large increase (from 4% to 10%) in the proportion of searches whose success or failure could not be judged immediately by the catalog users who were interviewed.

There was no clear correspondence between these catalog success rates and the judgments given by exiting visitors regarding the perceived success of their total library visits. The visit-success rates indicated by results of library exit interviews were 88%, 86%, and 89%. As previously stated, fewer than half of the visits to NYSL involve use of the public catalog.

Question 7.

After introduction of the online subject catalog, was there a change in the extent to which visitors made use of librarian assistance in conducting their catalog searches?

Yes, there was a change; but it did not persist. In the base study, 7.8% of the instances of catalog use by visitors involved some amount of direct assistance or oversight by a member of the NYSL staff. In the first follow-up, staff members were involved in 10% of the instances of catalog use by visitors. This higher level occurred with uses of both the online subject catalog and the online author/title catalog; with the microfiche catalog, there was a drop in staff involvement. In the second follow-up study, the involvement of staff members in catalog uses by visitors returned to the vicinity of the base level (to 7.4%), and the disparity between the online and microfiche catalogs was small. The temporary rise in staff involvement reinforces prior Library experience that the introduction of an online catalog, or new features in an online catalog, requires a substantial increase in staff assistance to users. Other factors which may lead to increase include: the increased visibility of online terminals in the public areas; the increased proportion of visitors who became new users of all parts of the public catalog. If this latter is an important factor, one would anticipate a further future decline in staff involvement with visitors' catalog searches when there are again fewer catalog users who are new users.

The pattern of change in proportion of catalog searches by visitors that were observed by staff members was very much the same as the pattern of change in catalog searches by staff that were observed by visitors. There was first an increase, then a decline in such observation in connection with online searches. There was a steady decline in connection with microfiche searches, and also in the over-all total of new observations.

Opportunities for Further Work

It is believed that the results that have been derived so far from this research will be of interest to many librarians and system developers. However, the benefit from the work done so far might be enhanced if means were found to report the results more fully and to disseminate them more widely.

There is much that might be done in order to provide additional useful information about the impact of automation on catalog uses and users:

The body of data amassed in this research project can be analyzed further for possible impacts on use factors not addressed in this report. It is planned to continue with such data analysis in the future, as our resources and commitments allow. Among the factors still to be examined are: possible differences between men and women in adapting to catalog automation, and possible linkages of differences in adaptation or in search success to differences in user affiliation, search motivation, or other demographic characteristics.

Further work is desirable to examine more closely some of the questions raised by the findings reported so far. One could extract more information about the phenomena of increased instances of subject searching and decreased rates of search success. Also, the matter of whether the average time spent on catalog searches is really a constant for a user population warrants closer examination. Using available data, one might determine whether the average time remains constant for different sections of the user population, partitioned according to specific demographic characteristics or specific search characteristics. One might also extend the study to observe search times of catalog users at similar libraries to determine whether the average times are the same or not.

More follow-on study weeks might be added to this research project in order to strengthen the knowledge about permanence or transience of the impacts observed at NYSL.

Knowledge of the general validity of this research might be extended by undertaking a careful comparison of its findings with the published findings of related investigations of online catalogs, especially the major cooperative research programs that have been sponsored by the Council on Library Resources.

The research might be extended longitudinally by applying the same methodology to detect impacts of the next scheduled major upgrade of the NYSL catalog system. The research might also be broadened to look for impacts of catalog system changes on the NYSL staff members, or on NYSL users who have off-site catalog access.

Finally, work might be undertaken to develop means of encouraging the acceptance and proliferation of research studies of this kind at other academic and research libraries. The possibilities here might range from conducting specific projects at interested libraries, to organizing training aids or workshops for practicing librarians, or to developing focused short courses for library school students.

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Appendix 1.

NEW YORK STATE LIBRARY USER EXIT INTERVIEW GUIDE

Mon. time: __:__ a.m./p.m. Day: M Tu W Th F . Date: __/__/8__. Fl: 7 11

Start time: __:__. Interviewer: _____. __Refused; reason _____

Pardon me, I'm working with the Library to conduct a survey of how the Library is used. May I have just a minute or two of your time to ask a few questions?

0. ___M ___F

1. Are you a member of the Library staff?
___No ___Yes; end of interview; "Thank you."

2. Is today the first time you have visited the New York State Library?
___No ___Yes; go to Question 5.

3. When was the last time you were here before today? _____

4. In the last 12 months, on about how many days would you estimate you were here? _____

5. Were you in and out of the Library earlier today?
___No ___Yes: How many times? _____. First time in today _____.

6. What time did you enter the Library (this last time)? _____.

7. Why did you come to the Library (this last visit) today?
(Mark (X) Main reason, and X Additional reasons)

*___ To look at some book or publication that you knew about before
*___ To borrow some book or publication: ____ for the blind
___ To return some book or publication: ____ for the blind
*___ To look for material on some topic; do research:
*___Genealogy Other, if offered _____
*___ To verify a reference; bibliographic information
*___ To get a librarian's assistance in locating information on a specific topic
___ Read my own material ___Relax ___On break from job
___ Sightseeing; looking around
___ Social call; meeting someone here: ___Selling
*___ To photocopy something; ___To pick up photocopying
*___ To use special equipment: ____for the blind
*___ To use database service
___ To attend a meeting
___ Courier; messenger
*___ Other _____

8. Were you able to do (*) what you came for?____ Did you need the help of a librarian or staff member? ____

9. This visit did you look up something in the Library's: ____microfiche catalog
____computer terminal catalog ____ both?
On which side of Library? ____Left ____Right (test) ____both

10. Was your visit here connected with:
____N.Y. State govt activity ____School work
____Other govt activity:_____ ____Personal research
____Work related (non-govt) ____Other

11. Are you:
____With N.Y. State Legislature: ____member ____staff
____With other government agency—state, local, Federal? _____
Agency and location: _____
____A student; school and location: _____
____In private employment in Albany area
____None of above; residing in _____

12. "Thank you very much." Ending time: __:__.

Remarks; unsolicited comments: _____

_____

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Appendix 2.

CATALOG USER INTERVIEW GUIDE, NEW YORK STATE LIBRARY

Equip. (ID: MFV/CT ___). Area: _____. Day: M Tu W Th F . Date: __/__/8_.

Use ended: __:__ a.m./p.m. User: __M __F. Interviewer: _____
__Refused; reason _____
(began: __:__ a.m./p.m.)

Pardon me, I'm working with the Library on a survey of how the Library catalog is used. May I have just a minute or two of your time for a very few questions?

1. Are you a member of the Library staff? ___ No. ___ Yes; go to Questions 5, 6, 7, 11.

2. Were you interviewed at a MFV or CT earlier today (not at Library exit)?
___ No ___ Yes: approximate time(s) _____

3. Have you used the (MFV or CT) here in the Library before this time?
___ No ___ Yes: ___ today ___ before today: most recent date, est. _____

4. In the last 12 months, about how many days would you estimate you have been in the Library, not counting today? _____

5. Would you tell me what kind of use you were making of the (microfiche/computer) catalog?
____ Looking up publication(s) you already knew to exist (known item search)
Knew beforehand: ___Author ___Title ___Call No. ___Subject (__other _____)
Did lookup by: ___Author ___Title ___A/T ___Call No. (__other _____)
Type of publication: ___Book ___Journal ___NYS document ___Other: _____
Was your search successful? ___ No ___ Yes Year of publication (if known): _____
____ Looking up reference of a known publication to get information about it (not to borrow)
Use "known item" follow-up questions.
____ Finding out what the Library has by a particular author
Author is: ___ a person ___ not a person: _____
Was your search successful? ___ Yes ___No* ___ Not sure*
*Explain _____
____ Looking up a particular subject or topic: _____
Did you look up by: ___ subject (___author and/or title ___Other:_____)
Number of relevant items identified? _____ Number expected? _____
Was your search successful? ___ Yes ___ No* ___ Not sure*
*Explain _____

6. Did you choose to do your search using the (MFV/CT) for any particular reason?
___ No ___ Yes*
*Why? _____

7. Did you make use of the printed catalog guide?
___ No ___ Yes*
*Were you satisfied with it? _____

8. Did you have help from a Library staff member in this search? ___ No ___ Yes

9. Was this catalog search connected with: ___ N.Y. State government activity
___ Other government activity: _____
___ Work related (Non-government)
___ School work
___ Personal research
___ Other: _____

10. Are you: ___ With N.Y. State Legislature: ___ Member ___ staff
___ With other govt agency (state, local, Federal)?
Agency & location: _____
___ A student: school and location: _____
___ In private employment in Albany area
___ None of above; residing in: _____

11. "Thank you very much" Ending time: __:__.

Remarks; unsolicited comments: _____

_____

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Appendix 3.

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